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THE ELEVENTH CENSUS

BY

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SUPERINTENDENT OF CENSUS

AN ADDRESS

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THE ELEVENTH CENSUS.

AN ADDRESS.

Mr. President and Ladies and Gentlemen.

I have been invited by the American Statistical Association to prepare a paper upon the "organization, administration, and results of the present Census," and have been particularly cautioned by your honorable secretary, Mr. Dewey, not to dwell upon the "census law or past censuses," but to talk about the present census, and will endeavor to comply with this reasonable request after a few preliminary remarks on another theme.

The eleventh decennial enumeration of the people and wealth of the United States has been completed, and the nation has started on another decade of progress with the usual complaint that the increase should have been greater. The decades ending in 1890 and 1891 have been ominous ones for officials in charge of census work both at home and abroad: the Canadian Parliament trying to overthrow the government because the increase in population was only 11.66 per cent; Englishmen grumbling because the population fell a million short of anticipations; Frenchmen alarmed because the numerical strength of the Republic did not meet their expectations; and your own Superintendent pilloried by patriotic guessers because the actual count fell a couple of millions short of their estimates. Looking back to-night on the past, I see two years of the most stupendous work which taxed every iota of physical and

mental strength. Harassed on the one side by pressure for employment, and on the other by unreasoning and oftentimes ignorant and malicious criticism, importuned at all times by well-meaning specialists anxious to extend their particular inquiries without regard to other work, together with the labor and vexation that attend the placing and handling of sixty thousand persons (for that number took part in one form or another in the Eleventh Census), the Superintendent of the United States Census is likely to experience much hostility during the brief term of his decennial public appearance.

No one understands better than you, gentlemen, how easy it is to assault a great work like the census, but assault is one thing and criticism is another. In the first place, we had to gather together and drill a vast army of raw recruits. Of course some of them did bad work. How could it be otherwise? General Walker will tell you the same was true of the Tenth Census. A census without error is an impossibility. Especially is this true under the present system of overloaded schedules and temporary organization. When completed, the reports of the Eleventh Census will make not less than 25 quarto volumes of 1,000 pages each. The amount of detail covered by these volumes is stupendous: the history of 63,000,000 people (including Indians and Alaskans) separately treated; the corporate and other limits of 150,000 minor civil divisions properly adjusted; the financial condition of these same divisions correctly stated; the agricultural, manufacturing, and mining resources of the nation carefully analyzed, in every case the information obtained from the individual, corporation, or firm; and the amount of the mortgage debts of the people abstracted from the records and obtained direct from millions of people by correspondence. Millions of schedules were tallied twice for the rough count alone. One handling of the population schedules for the purpose of punching the holes chronicled over one thousand million facts. After this, the 63,000,000 cards with their thousand million statements must each pass through the tabulating machine five times. These are but a few main

features of the census work. Would it be surprising, therefore, if people did find a few errors in the census with microscopes? If the same test of fault-finding and carping over minor errors, interviewing and falsifying discharged clerks, and twisting the facts generally, that has been applied to the Eleventh Census, were applied to the *Encyclopædia Britannica*, or *Appleton's Encyclopædia*, untold complaints could be lodged. And why? Because no statistics or honest statements of facts sufficiently simple to be exact for the entire land will ever be sufficient for the wants of local boomers of population, manufactures, mineral resources, or the heralds of our corn crops.

Up to the present time the work of the Census Bureau has been repeatedly attacked but not criticised. These attacks have generally come from newspapers in communities where the population did not come up to expectation; where recounts were asked for and refused on good grounds, or where recounts were forced upon the people in spite of protest. Then there are all kinds of boomers who attack the census to justify their own ridiculous estimates: the land boomer, who wants to sell real estate, thinks the population too small; the geological boomer, who wants to get a big appropriation from the State Legislature, inflates the value and output of the stone quarries and coal mines of his state; persons interested in schools and institutions for special classes are quite sure that we have not enumerated all the blind, the insane, the deaf and dumb, etc., because their estimates are put out of joint. The health "boomer" in our large cities usually ignores the census altogether. This was so in 1870 and 1880 in many cities. They calmly add fifty or a hundred thousand to the census returns, thus keeping down death rates, and let the people feast on the luscious falsehood rather than offend them by the bitter truth. So you see all the boomers are as a rule against the census.

It is not my intention to defend the census. There is no necessity for doing so. Most of you have received the preliminary publications of this Bureau, (a) and they are fair samples of what is being

(a) A list of bulletins already printed will be found in the Appendix.

accomplished. The printing of what will comprise the first four or five hundred pages of the population volume is about completed and will be ready before Congress meets. Four final volumes relating to special inquiries (mines and mining; wealth, debt and taxation; transportation, and Indians), are in the hands of the Government Printer, and the greater part of the special work will be finished this year. Thus in a short time the Eleventh Census will vindicate itself. The more criticism, if it be honest and just, the better the census. Where there is public apathy you are far more likely to find poor work through the indifference of subordinates than in localities awake to the importance of the census and jealously watching its results. So far as the Eleventh Census is concerned, I am satisfied that every line of every bulletin has been subjected to the closest microscopic criticism, and these examinations have not always been conducted in a spirit of fairness.

The preliminary bulletin was used to great advantage ten years ago, but a good printing office established at the time of the formation of the Census Bureau has enabled us to make still greater use of this means of speedily reaching the public. Bulletins have been published or are at present in type giving the population of every State and Territory of the United States by minor civil divisions. This work is really final, though a few minor errors may be discovered before the population volume is finally printed. The aggregate population announced November 26, 1890, has not been changed. In quantity we have published up to date about the same amount of population returns as the Tenth Census, though not exactly in the same shape. On special subjects we are considerably ahead of 1880, the total number of pages of bulletins published being 2,378 for the Eleventh Census as against 196 for the previous census. Profiting by the experience of General Walker, I secured a special appropriation for the printing of the preliminary work. A large proportion of the work has been done in the Census Printing Office. Of course minor errors have been found here and there in the enormous amount of special work, but

only one bulletin has been withdrawn from circulation. These reports will be strengthened in every possible way in the final volumes, but the result thus far speaks for itself and does great credit to the experts and special agents who have labored industriously, conscientiously and with ability to make the census a success. Of the thirty experts and chiefs on whom I have leaned heaviest, at least twenty-three held similar or prominent positions in the Tenth Census. These names will be familiar to your illustrious president, and they are assurance of good work—a list strong enough to discredit malicious attacks and irresponsible criticism: John S. Billings, Henry Gannett, S. N. D. North, James H. Wardle, Frederick H. Wines, Frank R. Williams, James H. Blodgett, J. C. Stoddard, William A. King, John D. Leland, Joseph D. Weeks, Henry Bower, George S. Boudinot, A. E. Shuman, Orlando C. Ketcham, W. H. Olcott, Ivan Petroff, Peter T. Wood, Charles A. Jenney, Harry Tiffany, William C. Day, Charles E. Buell, and T. C. Purdy. Among the new strength brought to the work are found the names of A. F. Childs, William C. Hunt, John Hyde, Mortimer Whitehead, Henry C. Adams, George K. Holmes, John S. Lord, Edward Stanwood, J. K. Upton, Henry K. Carroll, David T. Day, Thomas Donaldson, Henry T. Cook, Thomas N. Conrad, Frederick H. Newell, J. H. Hale, George A. Priest, Thomas C. McMillan, Allen R. Foote, George W. Graeff, William M. Sweet, Byron Rose, John Birkinbine, Richard P. Rothwell, Charles Kirchhoff, James B. Randol, R. L. Packard, John H. Jones, George F. Kunz, Lyman J. Childs, A. C. Peale, E. W. Parker, Burt Fesler, Charles H. Cooley, Thomas J. Vivian, Charles F. Pidgin, and Howard Sutherland, every one of whom has reason to feel as proud of the record made in the Eleventh Census as the others do of their records in both the Tenth and Eleventh.

There is not a failure in all this list of experts and specialists; not an inquiry that will have to be abandoned. I would be the last person to maintain that the census in all its branches is absolutely accurate, and you would be the last persons to believe such a statement.

It is true, however, that after making due allowance for the imperfections of the laws, the numerous inquiries dumped into the Census Office, and the magnitude of the work, results have been obtained decidedly in advance of any preceding census. It is true that owing to improved methods of tabulation we shall be able to secure results, especially in the population division, which could not have been obtained in 1880 without the expenditure of an amount of money far in excess of the appropriation. Comparisons, therefore, that may be made between the Tenth and Eleventh Censuses must not be regarded as criticisms (for the Tenth Census was a splendid piece of work), but merely as showing what has been accomplished by a careful study of General Walker's admirable plans, strengthened by new and better methods of tabulation, restricted as to the study of the latent resources of the country and the technology of industry, and by such improvements as experience in the Tenth Census may have suggested. The endeavor has been to make the Eleventh a purely statistical census, dealing only with information called for by law and although the new investigations added by Congress will make it nearly as bulky as the Tenth Census, the work has been held rigidly within the scope determined upon at the outset, and the plans originally formed have been substantially carried out. We have only been dealing with developed industries. Thus, in the matter of mineral resources, the work of the office was directed to finding the product from existing mines, leaving to the National Geological Survey and the State Geological Surveys the development of the extent of existing coal fields, of iron deposits, etc. Similarly in the matter of timber resources, the extent and value of standing timber being a subject under examination by the Division of Forestry of the Department of Agriculture was not taken by the Census, but the work in this Bureau was confined to the lumber product and its use in manufactures.

The study of the methods in use in the various branches of art and industry in this plan was not considered a part properly of the census inquiries, and was not touched upon. Similarly the study

of soils, and incidentally the surface geology of the country, although of the utmost value of themselves, and especially in their application to agriculture, was not considered as properly falling within the scope of the Census.

With these general ideas in view, the following plan for the Eleventh Census was mapped out, and has been adhered to throughout :

- I. POPULATION.—Characteristics, conditions, distribution, and parentage. Occupations.
- II. VITAL AND SOCIAL STATISTICS.—Mortality and vital statistics. Social statistics. Statistics of special classes. Pauperism and crime.
- III. EDUCATION AND CHURCH STATISTICS.—Education and illiteracy. Religious bodies in the United States.
- IV. VALUATION, TAXATION, PUBLIC EXPENDITURES AND INDEBTEDNESS.—Valuation and taxation. Receipts and expenditures. Indebtedness.
- V. FARMS, HOMES AND MORTGAGES. —Recorded indebtedness. Ownership of farms and homes and indebtedness thereon.
- VI. AGRICULTURE.—Irrigation. Tobacco. Farms, cereals, grass lands and forage crops. The fibers, forestry, and sugar. Live stock on farms and dairy products. Wool and miscellaneous. Horticulture, including truck farming, floriculture, seed farming, nurseries, and tropic and semitropic fruits. Viticulture. Live stock on ranges. Live stock not on farms.
- VII. MANUFACTURES.—General statistics of manufactures. Statistics of specified industries. Manufactures in cities. Lumber and saw mills, timber products. Slaughtering and meat packing. Chemical manufactures and salt. Clay and pottery products. Coke and glass. Cotton manufactures. Dyeing and finishing of textiles. Electrical industries. Manufactured gas. Iron and steel. Printing, publishing, and periodical press. Wool manufactures, including woolen goods, worsteds, felt goods, carpets other than rag, wool

hats, hosiery, and knit goods. Shipbuilding. Silk and silk goods. Agricultural implements. Paper mills. Boots and shoes. Leather, tanned and curried. Brick yards. Flour and grist mills. Cheese, butter, and condensed milk factories. Carriages and wagons. Leather, patent and enameled.

VIII. MINES AND MINING.—Mineral industries in the United States: Iron ore. Gold and silver. Copper, lead and zinc. Quicksilver. Manganese, Petroleum, and natural gas. Aluminium. Coal. Stone. Precious stones. Mica. Mineral waters. Minor minerals.

IX. FISH AND FISHERIES.—Statistics of fisheries by geographical divisions. Statistics of fisheries by name. Scientific and popular names of fishes, with their geographical distribution. Illustrations of the principal food fishes of the United States. Condensed description of fish by species. Statistical summary for each species for the United States. Directory of principal firms and corporations engaged in the fishing industry of the United States.

X. TRANSPORTATION.—Railroads. Statistics for the year ended June 30, 1890. Statistics for ten years ended in 1889. Lake, ocean and river transportation. Canals. Transportation on the Pacific coast. Express business. Street railways.

XI. INSURANCE.—Fire, ocean marine, inland navigation and transportation, and tornado insurance business. Life insurance, showing the business of level premium, assessment, and co-operative companies. Miscellaneous insurance, including the business of accident, burglary and theft guarantee, hail, live stock, plate glass, and real estate title guarantee, steam boiler, surety, and wind storm insurance companies. Fraternal and other beneficiary associations.

XII. INDIANS.—Report and statistics of the condition of Indians living within the jurisdiction of the United States, 1890, taxed and untaxed.

XIII. ALASKA.—Population and resources of Alaska.

XIV. VETERANS OF THE CIVIL WAR.—(Seven volumes of 1,000 pages each ; publication not yet authorized.)

XV. STATISTICAL ATLAS.—(Publication not yet authorized.)

While, as I have said, the Eleventh Census will be purely a statistical one, and in this respect has been condensed, in certain other directions the scope of the census was enlarged by several acts of Congress. Prominent among the additional matters touched upon is the ownership of homes and farms, and the amount of mortgages secured by real estate, which were authorized by special act of Congress and special appropriations made therefor. Certain questions were added to the population schedules which had never before appeared in a national census, such as the number of children born and number of these living at date of enumeration, questions relating to aliens and naturalization, and ability to speak the English language. The form of the schedule was changed, and for the first time a family schedule was used as a prior schedule to a considerable extent, especially in our large cities. Its use as a prior schedule was carried as far as seemed to be safe and economical. To what extent the prior schedule aided the enumerators in their work I am unable to say, but my impression is that in places where it was used intelligently and methodically it facilitated the work and increased the degree of accuracy. Of course a family schedule means about 20,000,000 separate schedules, and in 1900 will be about 25,000,000, but with mechanical tabulation and ample accommodations they are easily handled until the punching is completed, and then the punched card takes the place of the schedule. The punching was completed in six months, at the rate of from ten to fifteen million cards per month. This finished, we are now running the cards through the machines for the compendium tally.

By the use of electric tabulating machines it has become possible in the present census, for the first time in the history of statistical work, to aggregate from the schedules all the information which

appears in any way desirable. Heretofore the amount of such information which could be evolved from the schedules had been limited, especially in the degree of complexity of the tables. It had been possible to obtain related statistics in tabular form only to a limited extent, but with the machine the most complicated tables can be produced at no more expense than the simpler ones. To illustrate this, I need only call attention to the first handling of the cards by the machines after they had been punched, by which we obtain seventy possible combinations of facts as regards general population, six items relating to naturalization for foreign white and foreign colored, seven details as to color for the native and foreign colored, and six items as to the ownership of homes and farms, which concerns all householders.

The first time of passing the cards through the machine was naturally the most difficult. The clerks were mostly beginners, the error cards rejected by the machines had to be corrected, and the minor civil divisions adjusted. The average number of cards per day per clerk will range from 7,000 to 8,000 the first time through, and not less than 10,000 per machine for subsequent counts. One hundred machines with one hundred clerks are now tabulating one million cards per day. With sixty or seventy possible combinations at each handling, four or five times through the machines will about exhaust the information on the schedules.

From the first handling of these cards we obtain for each enumeration district a primary classification of the population according to native white of native parentage, native white of foreign parentage, foreign white, native colored, and foreign colored. In 1880 no distinction was made for native white as to those of native or foreign parentage. Each of the primary classifications just noted for 1890 is in turn subdivided according to sex and by the following age periods: less than 1 year; 1 to 4 years; 5 to 9 years; 10 to 17 years; 18 to 20 years; 21 to 44 years, 45 years and over. For all adult males of foreign birth a classification is also made as regards the number who have been naturalized, have taken

out naturalization papers, or are aliens, together with a separate classification as to the number of aliens who cannot speak the English language. In the same way for the native and foreign colored a separate classification is made as regards the number of blacks, mulattoes, quadroons, octoroons, Chinese, Japanese, and Indians. For all householders, also, a separate classification is made as regards the number who hire or own their homes or farms, and if owned, the number of homes or farms that are free or mortgaged. From the results of this first or preliminary count we shall be able to show by states, counties, cities, wards of cities, and for every municipal corporation in the United States for which a separate return of population was made by the Census enumerator, not only the simple statements as to the number of males and females, the number of native born and foreign born, the number of whites, negroes of pure or mixed blood, Chinese, Japanese, and civilized Indians, but all the combinations of facts as regards sex, color, and general nativity for each of the principal divisions of the population as regards age, comprehending children less than 1 year of age; children under 5 years of age, of special importance for purposes of vital statistics; the number of children between 5 and 17 years of age, or the school age; the number of males between the ages of 18 and 44 years, or the natural militia age; the number of males 21 years of age and upward, representing the potential voting age, and the number of persons over 45 years of age, or the aged and sterile classes.

Besides this, very interesting results will be shown by states and for principal cities concerning areas, dwellings, and families, comprehending the total number of families and dwellings, the average number of persons to a family, the average number of persons to a dwelling, the number of persons to a family in detail, as number of families of two, three or four persons, to the highest number reported; the number of persons to a dwelling in the same manner; and for the larger cities a special classification of the number of families to a dwelling. The only tally in 1880 as regards dwellings

and families was by simply counting the number of families and the number of dwellings in the given district, and dividing the total population of that district by the number of families and the number of dwellings, in order to obtain the average size of such families and dwellings.

So much for the first handling of the cards. It is expected that the result of this work will all be in the hands of the Public Printer before the close of the year.

The subsequent counts of the punched cards, as I have said, may number four or possibly five. They will furnish all the various particulars concerning each individual as regards place of birth in detail by states and foreign countries, ages by single years, occupations, months unemployed in remunerative occupations, foreign parentage, illiteracy, and conjugal condition, besides several new and important features of the present census as regards population. The inquiries concerning foreign born male adults as to the length of residence in this country, and whether they are naturalized or not, will furnish data in regard to the problem of unrestricted immigration. For all persons ten years of age and over, either of foreign birth or foreign extraction, an inquiry was made as to whether they were able to speak the English language. The results of these inquiries, particularly as regards the alien element of our population, will determine the number who have not yet learned to speak our language. Concerning all married women, also, a new inquiry has been introduced into the census, calling for the number of children born to them since marriage and the number of these children now living. This will aid in solving the question as to the relative fecundity of women of various nationalities. The present census law also calls for a subdivision of the colored population into blacks, mulattoes, quadroons, and octoroons. The result of this special requirement can furnish, however, only an approximation at most as to the real facts.

The separate enumeration of the names and service of survivors of the war of the rebellion has also entailed a great deal of labor in

the collection, correction, and classification of the results of this special enumeration, comprehending records of from 1,200,000 to 1,500,000 veterans, and which, if published, will occupy seven large quarto volumes of 1,000 pages each. At the last session of Congress no provision was made, however, for the printing of this huge directory of surviving veterans of the late war, and until such provision has been made for the continuation of this work no further steps can be taken toward the completion of the results of this most important and patriotic inquiry. Incidental thereto, however, by means of a special inquiry made on the population schedule, it will be possible to show for all surviving veterans their ages at the time of taking the census, where they were born, where they now reside, in what employments they are found, and what their present mental and physical condition may be; for the widows of such as have died, a similar presentation will also be made. This portion of the inquiry will be brought to completion as soon as possible.

In the subsequent counts of the cards the primary classification of the population into native white of native and foreign parents, foreign white, and native and foreign colored, will be observed in all cases. With the exception of the distinction already referred to for native white as regards parentage, the results concerning single years of age and place of birth in detail by states, territories, and foreign countries will not differ essentially from those arrived at in the census of 1880.

The results alluded to as intended to be shown in 1890 were obtained in 1880 by the following tallies: a rough count showing the population by white and colored, by native and foreign, and by male and female. I believe there were also tallied separately Chinese, Japanese, and Indians, where such occurred. Age was tabulated by single years, according to the six following heads: native white male, native white female, foreign white male, foreign white female, colored male, and colored female. From this tally the various tabulations of age, race, and sex were

obtained. The birthplace of persons residing in the United States was tabulated according to the forty-seven states and territories for the native born, with the distinction of white and colored, and according to some sixty foreign countries for the foreign born.

For foreign parentage, however, it will be possible in 1890 to show as regards each of these primary subdivisions a classification of birthplace of father in combination with the birthplace of mother for the following countries: United States, Ireland, Germany, England, Scotland, Wales, Canada (distinguished as to French and English Canadians), Sweden, Norway, Denmark, Bohemia, France, Hungary, Italy, Russia, with a grouping of other countries, and unknown. In 1880 foreign parentage was tabulated, according to what General Walker at that time appropriately termed "a highly complicated form," for a little more than one-half of the entire population, or 26,354,124 out of a total population of 50,155,783, according to whether the person was native or foreign born, and whether the father was born in one of the following seven groups of birthplaces: United States, Ireland, Germany, Great Britain, Scandinavia, British America, and other countries, and according to the same seven groups of birthplaces for the mother. Measured by possible combinations of facts, this means a total of 1,620 points in 1890 as against a total of 98 points in 1880.

In 1890 the occupations as returned by the enumerators have been classified under nearly three hundred heads, following in the main the classification used in the Tenth Census, but with certain modifications and amplifications to meet the requirements of the present census. The results regarding occupations will be shown according to the primary subdivisions of population, as already noted, by sex, for the eighteen places of birth referred to under foreign parentage, and for the following age periods: Under 15; 15 to 19; 20 to 24; 25 to 34; 35 to 44; 45 to 54; 55 to 59; 60 to 64; and 65 and over. In 1880 occupations were

tabulated under 265 heads, by sex, by three age periods, namely, 10 to 15; 16 to 59; 60 and over, and according to seven birthplaces, grouped as follows: United States, Ireland, Germany, Great Britain, Scandinavia, British America, and other countries.

Regarding illiteracy, a tabulation will be made for all persons ten years of age and over who can neither read nor write, or who are returned as being unable to write, subdivided according to the five primary divisions of population, by sex, and for ages by quinquennial periods from 10 to 25 years, by decennial periods from 25 to 45 years, and for those 45 years and over. In addition, such distinctions will be made as regards place of birth and occupations as may be necessary to determine the nationalities from which the larger part of this element of our population is derived as well as the employments in which they are more commonly found. In 1880 the illiterates were tabulated according to native white, foreign white, and colored, and subdivided by sex according to the following three age periods: 10 to 14; 15 to 20; and 21 and over.

One of the most striking illustrations of the improved methods of tabulation is the fact that General Walker was unable to tabulate conjugal condition even in its simplest form, though full data regarding the same were enumerated. In 1890, however, the conjugal condition of the people will be tabulated not only as regards native white of native and foreign parentage and foreign white, but for the colored a further separation will be made as regards the blacks, those of mixed blood, and for Chinese, Japanese, and civilized Indians, distinguished as to sex and age periods.

Speaking of errors, and they will creep in regardless of every precaution, reminds me of the fact that the punched card system provides a far better check against error than the old system of tallying. Every day a careful examination of the cards punched by each clerk was made, and the percentage of errors found that would pass through the machine rarely exceeded a quarter of one per cent. This system of examination comprised the taking of twenty-five to fifty cards at random and comparing them with the

schedule. In the work of punching, three classes of errors are likely to occur: first, the card may be improperly punched, that is, some part of the information necessary to a complete transcript may be omitted; in all cases, however, these cards are invariably rejected by the tabulating machines, and cannot be counted until the proper corrections have been made; second, the record punched upon the card may be an inconsistent one, as, for instance, a young person less than ten years of age may be recorded on the card as engaged at some remunerative occupation, as farmer, carpenter, etc., which, of course, cannot be the fact and is an error in punching; such inconsistent transcripts, however, must appear on the result slips when this class of information is tabulated, and will then, as a matter of course, be eliminated; third, the card may be so punched that the error may be said to be a consistent one, that is, the information as punched may not be the exact fact, and still is not inconsistent with the other facts punched on the schedule as regards sex, place of birth, occupation, etc.; for instance, a person's age may be punched 29 years instead of 25 years, yet the facts as regards occupation, place of birth, etc., are thoroughly consistent with such record. The latter is the only class of error which cannot be detected by the work of subsequent tabulation. I have every reason to believe, however, that the percentage of this class of error is entirely immaterial, particularly as it is as easy to punch a correct transcript as an incorrect one. And the reason for this belief is the fact that thus far, and we have run more than half the cards through the machines, the two classes of errors which can be detected only average a little more than one per cent of the total number of cards counted. In this connection it must be understood that of this percentage of error more than three-fourths are made up of omissions to punch one or more holes out of an average of from fourteen to seventeen holes to each card and less than one-fourth of incorrectly punched holes, this estimate being based upon a very careful examination of over two hundred thousand cards to determine the classes of error most commonly made.

Another point should also be stated. As I have just mentioned, in each punched card from fourteen to seventeen holes were necessary to represent all the information returned on the population schedule concerning each person enumerated; so that, if instead of basing the percentage of error, whether of omission or commission, upon the actual number of cards rejected, as has been done, it should be determined by the relation which the number of holes omitted or improperly punched bears to the whole number of holes punched in all the cards, the percentage of error discovered and corrected becomes hardly worthy of serious consideration, that is, less than one-fifteenth of one per cent. It is not likely therefore, that the errors that go undetected are consequential. The only way to insure absolute accuracy would be to compare every card, the cost of which would be so great that it would be folly to undertake it. With ordinary care and with additional checks the transcription of data has been undoubtedly as accurate, if not more accurate, than in previous censuses.

In closing these remarks relating to the population work I cannot speak too highly of the assistance I have received from Mr. William C. Hunt, of your city, special agent in charge of population. Much of the credit for the thoroughness of the work and the promptitude with which it has been done belongs to him.

The electrical tabulating system has not only been used by the population division but by Dr. Billings in tabulating the vital statistics, and by Mr. Wines in tabulating the statistics of pauperism and crime. As I shall show later on, the latter report is nearly completed, and will be ready for the printer in a few months. In speaking of his experience with the card system Mr. Wines recently said:

“ The essential difference between the Eleventh Census and that which preceded it was the adoption of the card system for the tallying of results and the use of the newly invented Hollerith electrical machine for counting the cards. Too much can scarcely be said in praise of this machine, which has enabled us to

compute results with much greater rapidity and accuracy than by the old method of tallying, besides giving the opportunity to make a much more thorough analysis of the figures.

“One who has not had personal experience in handling cards prepared as these have been cannot conceive the stimulating effect which they have upon the imagination of a statistical computer. They become endowed, in his fancy, with all the attributes of living beings, whose life experience is written upon their face in hieroglyphic symbols resembling in significance the traits of the human countenance. A card which means nothing to the uninitiated is converted into a pauper or a criminal, whose sin and suffering are as palpable as if the man himself were bodily present in the room. The groups into which they are cast are like the divisions of an army, from the corps to the battalion. Under the mysterious influence of the electric current running through the machine, they organize themselves, as though possessed of volition, into these groups and subgroups, with a precision superior to that shown in any movement of disciplined troops at the word of military command. I can compare this current to nothing less intelligent and powerful than the voice of the archangel, which, it is said, will call the dead to life and summon every human soul to face his final doom.

“The first advantage of the Hollerith system is the more than stenographic celerity with which the record of each individual enumerated is transferred from the original schedule to the cards for tallying. Instead of the multiplied motions required in transcription by the ordinary process of writing, one turn of the wrist suffices for the recording of each reported fact. If some time is lost in placing the cards in position in the punching machine, on the other hand the record does not require so many independent physical movements as are necessary even in stenographic writing, where each line represents a sound.

“In the next place, the entire record for each individual is on a single card, and, once made, can never be changed. Under the old

system of tallying by check marks employed in the Tenth Census, recourse had to be had to the original schedule for each successive tally, and if the results in one tally did not correspond to those obtained in another the work had to be done over. Under the new system, when the cards are once correctly punched the schedules are put away forever, and there is no chance for any disagreement between one tally and another. In the Tenth Census all work was done in duplicate, by two sets of clerks, and the results compared for the sake of accuracy and certainty; in the Eleventh Census this duplicate proof has been rendered needless, thus saving both time and money.

“The limitation in usefulness of the punched cards is due to the impossibility of increasing the number of holes on the punching plate, which are insufficient to admit of a complete analysis of all the recorded facts. Practically, however, this analysis can be carried as far as the limitation of cost of the Census will allow.

“But the great superiority of the present system consists in the substitution of a purely mechanical method of counting for the tedious and trying Scaton slips of paper, on which the tally was made by pencil marks. It saves the eyes of the tallyist, reduces the number of tally clerks required, relieves them of the difficult task of actual counting, and avoids the possibility of errors arising from their weariness or inattention. The work which they do becomes sooner or later purely automatic, and the speed which they attain by practice, if adapted to it, is wonderful. Under that system groups of co-ordinated facts are as easily and quickly tallied as single facts, and that without any demand on the intellectual faculties of the tallyist. The possibilities of new combinations in tabulation without extra cost are enormously increased.

“Besides, the sorting-boxes attached to the machine, which are operated by an independent electrical current, enable the statistician to tie up the cards in separate bundles, which are not disturbed until their usefulness is at an end, and then a new arrangement of the cards is practicable, which can be retained as long as

expediency dictates. For example, I have at the present moment 273,455 punched cards, namely, 82,329 prisoners, 73,045 paupers in almshouses, 14,846 inmates of juvenile reformatories, and 113,235 inmates of benevolent institutions. These have all been sorted, first into the five geographical groups of states, according to the plan adopted for all census work; then into the elements of the population for each group, namely, natives with both parents native, father native, mother native, both parents foreign, one or both parents unknown, foreign-born, persons whose birthplace is not stated, negroes, Chinese, Japanese, and Indians. This analysis has been maintained throughout the whole of the work of the eighth division, and will be maintained to the end. Then I have taken the prisoners and subdivided these groups, for that class, according to groups of criminal charges preferred against them, such as larceny, burglary, arson, homicide, etc. I could, had I preferred it, have divided them by ages or by length of sentences imposed, or in any other way. The final outcome of my studies will show that the opportunity to preserve these groupings intact has been of the greatest service in facilitating a more thorough analysis than would otherwise have been possible; and, besides, there is no room for questioning the accuracy of each table evolved, since the results obtained at each successive step must correspond in the aggregate, figure for figure, with those obtained at each previous stage of the entire process, and an error cannot occur which will not infallibly be detected."

This would seem to dispose of all questions as to the accuracy of the method, while the speed and economy is also demonstrable.

Next in importance to the count of the people are the vital statistics and the statistics of the special classes; for after we know the number of our population, its characteristics, distribution, and parentage, the question of its health and physical condition naturally comes up for consideration. The Census Office was fortunate, therefore, in securing the services of that eminent authority on all matters appertaining to vital statistics, Dr. John S. Billings,

surgeon United States army, whose report for the Tenth Census was far in advance of anything ever attempted in this direction before.

The great importance of complete and accurate records of vital statistics, including marriages, births, and deaths, is becoming more and more recognized in this country. Such records are the absolutely necessary foundation for well-directed attempts to improve the health and lengthen the life of the people; to increase the productive efficiency of the workers; to form a sound basis for the enormous money interests involved in the business of life insurance, and for other purposes vital to the health and well-being of the population. The great majority of the States have still no satisfactory system for registration of vital statistics, although most of them are slowly being improved in this respect.

The accurate collection of statistics of mortality by means of the regular Census enumerators is perhaps the most difficult undertaking imposed on the Census Office. Any efforts to secure a statement of facts concerning the deaths occurring in any locality during the year preceding the date on which the inquiry is made will necessarily fall short of securing a complete return. This fact has been well understood, and every effort made to supply deficiencies that could be successfully carried out. The most reliable data are obtained from those localities in which local laws require the registration of each death at the time it occurs, and wherever the facts so recorded furnished sufficient data for the use of this office, copies have been made of the registration records. This has been done to a much greater extent than in any previous census.

The great advantage of the system of tabulation adopted and already referred to lies in the fact that it is possible under that system to make an entirely accurate compilation of the data collected, inasmuch as the whole record in each case is kept upon one card, which is used in all the subsequent steps, and which is identified with the case it represents by a number, permitting quick reference to the original record in case of any discrepancy or inconsistency appearing in the results, a feature which is not possible under any system of tabulation involving the use of tally sheets.

The most important new features of work in this direction are as follows:

(1) A special study of the birth and death rates and of the principal causes of death in twenty-four of our largest cities, to show where the highest and lowest death rates prevail and what the relations of these are to topography, drainage, character of habitations, overcrowding, poverty, and other environments.

(2) A special study of the influence of race upon fecundity and mortality, including studies of the birth and death rates of mulattoes as distinguished from negroes on the one hand and whites on the other, and of the principal European races which have contributed to the population of this country.

(3) A special study of the relations of occupation to death-rates and to particular causes of death, as shown by a detailed study of figures derived from the records of our largest manufacturing cities for a period of five years, in addition to the data of the whole country for the census year which were obtained by the enumerators.

The records obtained from states and cities maintaining a compulsory system of registration of deaths are much larger than those obtained in previous censuses, and cover an aggregate population of over 17,000,000. The death records of this population for the census year in the state of New Jersey, in New York city, Brooklyn, Richmond county, Westchester county, Kings county, and part of Queens county (New York), and in Boston, Philadelphia, Baltimore, and the District of Columbia, and for a somewhat lesser period of time in Chicago, St. Louis, and Cincinnati, have been tabulated. The total number of deaths thus recorded, the records of which are especially accurate and complete, is 740,884. These records, in connection with those for the census year, furnish a continuous record of deaths for these localities for a period of six years, which will afford more reliable information than anything which has heretofore been published with regard to the vital statistics of this country.

Dr. Billings likewise has charge of the statistics relating to the insane, feeble-minded, deaf, and blind, classified in the Eleventh Census under the head of "Special Classes." A comparison with the returns of 1880 indicates that the enumeration of these classes has been upon the whole satisfactory and the treatment of the returns will be substantially the same as ten years ago.

I have not attempted such an elaborate report on the social statistics of cities as that inaugurated in 1880 by Col. George E. Waring. Still the subject was important, and it seemed a pity to omit it altogether. It was therefore decided to make a statistical report on this subject, and the results have been highly satisfactory. The work is now substantially completed, all available information tabulated, errors corrected, and verifications made.

Nearly all the information for the treatment of social statistics of cities has been collected through the several city officials, mostly without expense other than clerical work. Letters explaining the scope of the work were sent to all places having a population of 10,000 and upward, and the several chief executives were asked to co-operate with this office, to enable their cities to have full representation in the final report. Schedules were then prepared, covering all points to be treated, and so divided that each one could be referred to the officer having jurisdiction of the subject to which it pertained. There were twelve schedules covering the following points: Altitude, cemeteries, drainage, fire, government, licenses, parks, police, public buildings, streets, street lighting, and water works. The railroad statistics, including suburban travel, were obtained directly from the officers of the several roads. Bulletin No. 100 shows the manner in which all cities will be treated in the final report.

The scope of the investigation is one that will be useful to every municipality in the country. Apart from showing the conditions surrounding the inhabitants of cities of 10,000 population and upward, it presents in concise form the cost of all municipal improvements. The present inquiry, owing to its purely statistical

treatment, will form a solid basis for subsequent investigation on the same line, but no comparison can be made with the work of Colonel Waring because the volumes of the Tenth Census did not give sufficient statistical data.

As to securing information relating to pauperism and crime for tabulation, there was no essential difference between the Tenth and Eleventh Censuses. Schedules were sent to the larger institutions to be filled by the officers in charge, and for the smaller institutions reliance was placed upon the regular enumerators. The inquiries contained in these schedules were for the most part identical with those ten years ago, though some new questions were added, and the forms of the schedules were, in my judgment, materially improved. A new feature of the Eleventh Census, however, was the appointment of institution enumerators selected by the authorities in charge of the institutions, and the payment of such enumerators, a method which was found to work admirably in practice. The same plan was adopted with all benevolent institutions. In this way we secured three or four thousand of the very best equipped persons as enumerators for a class of work that would be difficult for ordinary enumerators to perform.

The statistics of crime, defect, and misfortune are like the record of thermometric and barometric observations in meteorology, or like the varying movements of the needle which indicates the pressure of steam in the boiler. It is matter for congratulation that the figures for 1890 when compared with those for 1880 show no alarming growth of these evils during the past decade. The number of prisoners returned in 1880 was 58,609; in 1890 it was 82,329; an apparent increase of forty per cent against an increase of a little less than twenty-five per cent in the population at large. But an examination of the figures shows that this relative increase has been in the population of our minor prisons, not of our penitentiaries, and it does not indicate any greater prevalence of serious crime; indeed, it may be due merely to greater care and severity in dealing with disorder

and petty misdemeanors. The number of paupers in almshouses returned in 1880 was 66,203; in 1890 it was 73,045, an increase of only about ten per cent, or less than half what might have been anticipated. The number of juvenile delinquents in custody in 1880 was 11,468; in 1890 it was 14,846; an increase of between twenty-nine and thirty per cent, or very nearly the same as that of the total population. The slight excess is an encouraging fact, since it shows a growing disposition to rescue young offenders from a criminal career.

In Bulletin No. 90, relating to the almshouse population, a table is published, by way of appendix, which shows the number of outdoor paupers found and returned by the Census enumerators. These figures have been much misunderstood and misrepresented by persons who have failed to apprehend the fact that no statistics of outdoor relief can be procured through the agency of the enumerators, for the obvious reason that they cannot ask at every house whether any of the member of the household are paupers. Their local knowledge enables them to report a few of this class. Both in the census of 1880 and 1890 such information as has been obtained in this way has been given to the public, chiefly for the purpose of demonstrating the futility of any effort in this direction. But it should be known and understood that probably not one outdoor pauper in ten ever has been or ever will be discovered and reported by the Census enumerators.

Education was a subject of national census inquiry for the first time in 1840, fifty years ago, when in no entire state but the commonwealth of Massachusetts were public schools and free schools synonymous. The change that almost immediately after that census set up the union free school as a standard in a town of New York swept on across the new states of the West, but compelled to jump over Indiana for the time by an adverse judicial decision, and since the civil war almost the whole Union has come into line for local taxation to secure the support of public schools. The public provision has widened for superior and secondary as well as

elementary education, not so strikingly evident in a state whose early policy foreshadowed what we now see, as in the nation at large, embracing states which for years depended mainly upon private interests for the education of the people. Without pausing to dilate upon the township land grants in all the new states for elementary schools and the special endowments of the agricultural colleges, the records show a more rapid growth of school enrollment than of population, indicating how vital an interest this is to the people. The general conditions for each decade of pupils enrolled in schools, exclusive of special classes, reformatory, charitable, and Indian schools, appear to be as follows :

	1840	1850	1860	1870	1880	1890
Population....	17,069,453	23,191,876	31,443,321	38,558,371	50,155,783	62,622,250
All schools....	2,025,656	3,642,694	5,477,037	7,210,420	14,372,683
Primary and common 1840, public 1850, etc.....	1,845,264	3,354,173	4,955,894	6,228,060	9,951,608	(a) 12,707,683

a Including private and parochial, each 800,000 ; advanced public, 65,000.

Education has not only been a dominant consideration with the philanthropist and moralist, but from the point of view of the statesman and the economist, so much are public policy and public energy involved in its administration.

The conditions point out two distinct lines of census inquiry on education. The population schedules embodied questions as to age, sex, maternal nativity, occupation, in which attendance at school as teacher or pupil is included, and illiteracy, from which could be derived tables showing the amount of time used in teaching, or by children as pupils, as well as an analysis of the condition of occupations and nativity of illiterates.

Much is said of school age. It is to be remembered that school age pertains to state laws, and that there is no national school age.

The state laws vary so greatly on this point that it is better for a national census to give the facts for each year from four years, the minimum in any state, to twenty-one years, the maximum in any state. Individual states can then derive from the national reports such facts as are useful under their own laws. The items above named have never been sought except to a very limited extent by any authority other than a national or a state census, and for the country as a whole by a census only. Few states have yet taken a separate census. The more stress is to be laid upon this matter, as in the discussion as to what is desirable for the future for the Census Office some have presumed that educational statistics were available without the Census. It is to be emphasized that except through the decennial national census no statistics of national illiteracy have hitherto been available. These conditions, as shown by the population schedules, are being tabulated as rapidly as possible.

There is another line of inquiry which ought to be readily handled, and educators and school officers should see to it that it becomes comparatively easy for even a private individual to gather the facts for his own satisfaction in any year. This line of inquiry is the reports of the institutions as distinguished from the statements by the heads of families. It is now a laborious inquiry, not altogether satisfactory, because of the exceeding diversity of records. It should be so light a work that any state could afford to give an outline table of attendance for the Union from its exchanges with other states, occupying a small space, to make a comparative view for its citizens in any regular report. It is now, however, no light work to gather even the public-school enrollment.

Taking warning from the fate of educational statistics in the Tenth Census which largely failed of publication, it was determined to confine the inquiries in the Eleventh Census to a small number of essential questions most readily answered, the results of which would be capable of being most promptly prepared for pub-

lication. The schedules sent out for the public common schools, therefore, asked only for the number, sex, and color of the teachers and pupils, and a separate statement for those in high schools. Simple as this schedule was, it was necessary to send thousands of inquiries to local officials in some of the states because the ordinary report took no account of sex or color. Even number is not a simple matter in practice, whatever it may seem in theory. In some cases the promotions, re-enrollment, and transfers within the year all went to swell the annual enrollment, while in other cases all such duplications were carefully excluded, most completely of all the states by the commissioner of common schools for Rhode Island. Sex was omitted from the usual reports of twenty states at the organization of the Census; the chief officials in seven of these were able to adjust their reports for the census year so as to report sex. There is an idea prevailing in certain quarters that number is the only essential item. Passing by the important question whether more boys or more girls are occupied in wage labor—and so anywhere the balance of the sexes is disturbed in elementary schools—here in the state of Massachusetts are a little over 25,000 pupils in public high schools. It is well known to those who have paid special attention to the subject, that in the country at large girls greatly predominate over boys in high schools. Now it is a question of consequence whether the high schools of Massachusetts are equably educating the young people or whether they tend to become young ladies' seminaries, yet the attendance by sex is not a matter of state record. In the nation, color becomes an important item as a superficial indication of race, though in large portions of the country one race is almost absolutely prevalent to the exclusion of others.

Here in Massachusetts it was not presumed that a teacher would find it difficult to make a suitable estimate of the sex of his pupils and of the few colored enrolled in the census year from his knowledge of changes by the time inquiries reached him. The press has rendered invaluable aid to the census and so to the community, and it was by the criticism of an enterprising Boston daily upon

the inadequate showing in a Census Bulletin of the reports on color in the schools furnished by the local authorities, that something like a fair statement of the colored enrollment was at last secured for Massachusetts. The criticism of the newspaper led some officials even to send corrections for their original reports. The fullness and accuracy of reports of institutions depend on school officials. If the records are defective no inquiry after the year is ended can be readily answered, and so for all institutional reports the first essential is completeness of the leading particulars of record. If the local records are properly made and preserved, their compilation into state and national tables will be a very simple and easy matter, not very burdensome upon any bureau that may do the work.

In the absence of anything like a uniformity of record of attendance, it was deemed wholly impracticable to secure the exceedingly important item of effective attendance which could be expressed by the aggregate number of days' attendance of all pupils. It is in evidence of the labor that the general statistics of school enrollment for the census year throughout the country are not yet available to the public except through Census publications, and it is in evidence of the energy with which the work has been pushed by Professor Blodgett that the facts are available to the public at so early a date. The final results, with very slight allowance for additions to private and parochial schools, will show close to fourteen and a quarter million pupils in all schools, including nearly eight hundred thousand in private schools and a like number in the subdivision parochial schools.

To be definite, the enrollment in the common schools of the United States in the Eleventh Census year will not vary appreciably from the following statement:

	Total.	White.	Colored.
Teachers.....	361,781	337,740	24,041
Pupils.....	12,707,683	11,350,587	1,357,096

The office has occasion to recognize an almost universal, hearty and cordial co-operation by public and private school officers and managers of parochial schools.

It is undoubtedly true that for the first time the United States Census has secured complete church statistics. By limiting the number of questions and by the most persistent and voluminous correspondence, we have nearly finished the work of showing by counties the number of church communicants in something like 130 religious denominations and their several branches. These statistics have been gathered expressly for the Eleventh Census. None have been copied from printed reports, except so far as those reporting for districts or associations or conferences may have used printed matter when other sources of inquiry failed. The plan adopted was to secure the statistics desired through the clerks of the various ecclesiastical subdivisions. In churches having the presbyterian form of government, the stated clerks of presbyteries were requested to gather, by the use of printed circulars, the statistics from the churches within their jurisdiction, enter the results in schedules and forward them to the Census Office; in churches having the episcopal form of government, this work was placed in the hands of the secretary or bishop of the diocese; in churches having annual conferences, like the Methodist Episcopal, the presiding elders of districts, who visit all their churches once every quarter, were commissioned to obtain the desired information; in the Catholic churches the very arduous task of collecting the necessary statistics was intrusted to persons selected by the ecclesiastical authorities; in denominations having no ecclesiastical conferences or associations, like the Unitarians, each pastor was communicated with directly. I may say that this plan has worked admirably. It would have been impossible to communicate with all pastors direct, because in many churches they change their location very frequently and new congregations are being constantly organized, and reports obtained in this way would be necessarily incomplete. Each stated clerk of

presbytery, secretary of diocese or association, or presiding elder of district, knows intimately all the congregations within his jurisdiction, and this fact insures complete and intelligent reports. The number of secretaries, stated clerks, and presiding elders who have assisted in this way in obtaining statistics is very large. Many of the denominations for which full returns have been obtained never gave to the public before any statistics whatever. The following returns have been tabulated and are already printed in bulletin form :

FIRST BULLETIN: Advent Christians; Evangelical Adventists; Life and Advent Union; Baptists; Seventh-Day ; Seventh-Day German ; Six Principle ; Brethren in Christ, or River Brethren ; Catholic Apostolic; Christian Church South; Church of the New Jerusalem (Swedenborgian); United Presbyterian; Salvation Army; Schwenkfeldians; Theosophical Society.

SECOND BULLETIN: Brethern (Plymouth); Church of Jesus Christ of Latter-Day Saints (Mormons); German Evangelical Protestant Church; German Evangelical Synod; Moravian (Unitas Fratrum); Cumberland Presbyterian; Reformed Episcopal.

THIRD BULLETIN: Armenian Catholics; Greek Orthodox Church; Greek Catholic Church (Uniates); Old Catholic Church ; Reformed or Converted Catholic Church; Roman Catholic Church; Russian Orthodox Church.

FOURTH BULLETIN: Mennonite; Bruederhoefer; Amish; Old Amish; Apostolic; Reformed; General Conference; Church of God in Christ; Old Wisler; Bundes Conference; Defenceless Brethren ; Dunkards (Conservative); Dunkards (Progressive); African Methodist Episcopal; Wesleyan Methodist; African Union Methodist Protestant; Independent Churches in Christian Union; Temple Society; Church of God; Reorganized Church of Jesus Christ of Latter-Day Saints; Shakers; Amana Society; Bruederhoefer ; Harmony Society; Society of Separatists; New Icaria; Altruists.

FIFTH BULLETIN: Lutheran; General Synod; United Synod in the South; General Council; Synodical Conference; Joint Synod of Ohio and other States; Buffalo; Hauge's; Norwegian; Michigan; Danish Lutheran Church in America; German Augsburg; Danish Lutheran Church Association; Icelandic; Immanuel; Suomalainen; United Norwegian; Independent Congregations.

The following returns for two bulletins are in course of tabulation: .

Associate Church of North America; Associate Reformed Presbyterian Synod of the South; Bible Christians; Christian Connection; Disciples of Christ; Disciples of Christ (Colored); Cumberland Presbyterian Church (Colored); Friends: Orthodox, Wilburite, Hicksite, Primitive; Hebrews: Orthodox, Reformed, Hebrew Christians; Independent Methodist; Reformed Church in America; Reformed Presbyterian Church of North America (General Synod); Reformed Presbyterian Church in the United States (Synod); Reformed Covenanted; Reformed Presbyterian Church (Pittsburg Presbytery); Social Brethren; Society of Ethical Culture Spiritualists; Union American Methodist Episcopal; Welsh Calvinistic; United Zion's Children; Confucianists; Christian Reformed Church in the United States; Seventh-Day Adventist.

Church of God (Age to Come); Baptist (Regular); Baptist (Regular, Colored); Baptist (General); Baptist (Primitive); Baptist (Primitive Colored); Baptist (Original Freewill); Baptist (Free); Baptist (General Freewill); Brethren (Owen's); Brethren (Whelpley); Brethren (Old Order); Christian Scientist; Church of God in Christ Jesus; Church Triumphant; Church Triumphant (Koreshan Ecclesia); Congregationalist; Evangelical Association; Congregational Methodist; Free Methodist; Methodist Episcopal South; Methodist Episcopal; Primitive Methodist; Colored Methodist Episcopal; African Methodist Episcopal Zion Church; Methodist Protestant; Presbyterian Church in the United States; Presbyterian Church in the United States of America; Protestant

Episcopal; United Brethren (Old Constitution); Unitarians; Universalists.

The volume on Church Statistics will be ready for the printer by the close of this year.

The work of the Wealth, Debt, and Taxation Division of the Census has been modeled after the work of 1880, which I had the honor to compile under the direction of General Walker. The debt work is now completed and in the hands of the printer, and I hope to have the completed volume out early in 1892. Except in the matter of receipts and expenditures, the scope of the work for 1890 is not much greater in extent than it was for 1880, but the work itself is far more exhaustive in detail. In 1880 the debt of only twenty-seven foreign nations was compiled, and these from unofficial sources. In 1890 full official details will be published of eighty-one countries, and their per capita. The debt of the United States is also much more in detail in 1890 than in 1880, and with it is shown the paper and coin circulation, which was not shown at all in 1880. In 1880 the debt of the states of the United States as published showed few, if any, details, and no account was taken of the funds held by the states, either in amount or character. For 1890 complete details of every outstanding loan and of all funds on hand will be shown for each year from 1880 to 1890. The municipal and school district debt was not published in detail in 1880, except for New England. In 1890, every place that has a debt will be reported.

In 1880 the receipts and expenditures of only 310 municipalities, being those having a population of 7,500 or upward, were shown. In 1890, not only will the expenditures of these cities be shown, but the receipts and expenditures of the states for ten years, in detail, of all the counties where information can be obtained, of all municipalities having a population of 4,000 or upward, probably more than 1,000 in number, and of all the school districts in the United States by counties.

In 1880 no details of valuation of cities less than those having a population of 7,500 were shown except in New England, Michigan, New York, Pennsylvania, and New Jersey, and in the three latter the details of taxation were not shown. In the Eleventh Census, 1890, the valuation and taxation of every place in the country having a population of 1,000 or upward will be published, and probably in New England, New York, and Pennsylvania every place with a debt-creating and taxing power. Speaking as the author of the work ten years ago, I do not hesitate to say it will be in every respect a far more valuable and complete report.

I have now come to a novel feature of the Census.

It has cost nearly a million dollars thus far to collect the statistics of mortgage indebtedness of individuals and private corporations throughout the United States. That seems like a large sum of money, but it will take, as I informed the committee of both Houses of Congress when the matter was under consideration, at least another half million dollars to finish the investigation. Did Congress act wisely in appropriating a million dollars to carry on this investigation, especially when the committee was informed at the time that certainly half a million more and possibly another million would be required to finish the investigation? It was not a hesitating act. Both parties voted for it. In the Senate I believe but four votes were cast against the bill, and in the House of Representatives not over twenty-five negative votes were recorded. It was a novel not to say a bold step in statistical inquiry. Old statisticians shook their heads and said the obstacles in the way of such an investigation were too great to overcome. All over the country could be heard murmurings of discontent and declarations that the people of the United States would never submit to such an inquisitorial inquiry into their private affairs. Reckless newspapers made this investigation, forced upon the Census Office in spite of the repeated protests by almost a unanimous vote in both Houses of Congress, an excuse for attacks upon the whole Census, and called upon the people to resist the enumerators,

if necessary, with force. Meantime the Superintendent of Census was sorely perplexed. This novel inquiry had been ordered on the very eve of sending out the population schedules. Those schedules were complete and the public printer was ready to start the printing of 25,000,000, the probable number required. No time could be lost. To put questions in the population schedules asking every individual in the United States the amount of the mortgage on his farm or home, the motive for contracting the debt, and the value of his property, would have swamped the constitutional enumeration of the people. The amount of irritation which would have been aroused had this course been adopted cannot be estimated. The enumeration of the people would have been endangered and for no purpose, because in the very nature of things the enumerators would have failed in half the cases to obtain the desired information about mortgages. The accepted theory of the Census is that the enumerators see personally about one in every seven of the inhabitants. Already the population schedule of the Census was bowed down with the burden of a double yoke. There were twice as many questions as should have been propounded before those relating to mortgages were added. These questions, however, were made as easy as possible by throwing out all reference to the amount of the indebtedness, interest, value of property, etc., and confining them to a simple inquiry as to whether the farm or home was owned or rented, and if owned, whether free from debt or incumbered by a mortgage. If unable to ascertain whether a home was mortgaged or not, the enumerator was instructed to give the full name and address of the owner, and in subsequent correspondence the Census Office assumed that the property was mortgaged until otherwise informed. This solution proved a practical one, and has formed the basis of one of the most valuable and interesting investigations ever undertaken by any government. While the addition of these and other questions, such as those relating to the veterans of the late war and other inquiries, increased the cost and added to the difficulties of the constitutional enumeration, and

while my individual voice will always be raised against thus overloading the population schedule with special inquiries, I am satisfied that owing to the high character of the supervisors and the faithfulness and intelligence of the vast body of enumerators, the enumeration of the people did not suffer to any serious extent. At the same time Congress should in future legislation simplify the population schedule and relegate all questions relating to special inquiries to other schedules, to be subsequently filled out by special agents or by enumerators employed by the day.

From a statistical standpoint, the work of collecting information in regard to mortgage indebtedness has been prosecuted with a success far beyond the anticipation of statisticians who have studied the question for years. At the present writing it is impossible to estimate the full benefits which will be derived from such an investigation. The employment of a small army of 2,500 special agents and clerks to make an abstract of every mortgage placed on record throughout the United States for the last ten years has attracted attention to the dangers of these incumbrances, to the enormous burdens in the way of interest, to the alarming extent to which usury is practiced, and to the defectiveness of these records in all parts of the country. The agents of the Census Office have, as I have said, overhauled the records in every state and territory. They have traveled on horseback and on foot through the most sparsely-settled districts of our vast domain in search of mortgages, and have done their work so industriously and so thoroughly that we now have on file in Washington, as a result of their labor, the abstracts of about 9,000,000 mortgages. Some months before the inquiry was begun, Congress, and through Congress the public, was put in possession of the scope of the plan adopted. That plan, with hardly any change, has been successfully carried out. It comprised two distinct methods, one having the local records for the basis of operation, the other the population schedule, and hence the individual.

The two important features brought out in this inquiry are the amount of mortgages placed on record each year for ten years and the amount of the existing debt. It would, of course, be absurd to accept the amount of the uncanceled mortgages as the amount of debt in force. Such an exhibit would manifestly be a gross exaggeration unworthy of confidence. The extent of this defect in the records has been ascertained by the Census Office in 102 counties representing all parts of the country, and in 61 of these counties that have been tabulated the face of the uncanceled records exaggerates on the average the true amount of the debt by 71 per cent. It was therefore decided to make a transcript of the record in every case for ten years and ascertain therefrom the average life of a mortgage.

Preliminary experiments by special agents of the Census Office pointed to the use of the average life of mortgages, with an allowance for partial payments, as promising results much nearer the truth, near enough, at any rate, to be fairly conclusive as to the amount of existing indebtedness. This plan is approximately correct, and under perfectly uniform conditions would produce accurate results. An objection that can be raised against it is that mortgages are not uniform in amount and number recorded each year. These variations, however, when large amounts of debt are considered, are not as great as may be supposed, and under careful observation and corrective treatment lose much of their influence for error. If the average life of all mortgages under such circumstances is four years, and the total amount of the mortgages recorded within the last four years is taken as equivalent to the amount of indebtedness existing at the present time, it is evident that many paid mortgages created within the four years are included within the amount, and that many unpaid mortgages created more than four years ago are not included. In such cases it is true, if the average life of mortgages is correctly represented, that the mortgages of the life period of four years now paid are exactly equal to the mortgages made

previously to the life period and now unpaid, so that the total recorded debt of the life period stands for the amount of debt in force.

Our agents were therefore instructed to transcribe for every real estate mortgage acknowledged and received within the ten years ended December 31, 1889 (except mortgages made by public and quasi-public corporations), the following facts: The state and county in which the mortgaged real estate is situated; the year in which the acknowledgment was made; corporations, both as mortgagors and mortgagees, classified as savings banks, banks (including loan and trust companies, but not including savings banks), building and loan associations, insurance companies, mortgage corporations, and all others; the original amount of the debt; the actual rate of interest or, if not ascertainable from records, the customary rate at the time; the number of incumbered acres and city or village lots; and also, for the canceled mortgages of 1880-'83, the full dates of acknowledgment and cancellation. For the purpose of checking this inquiry special investigations were conducted in 102 counties well distributed throughout the United States, and representing every phase of American life and industry. In these counties the same facts were taken from the records as in other counties, and also for all uncanceled mortgages as far back in time as any appreciable number of them were found in force, the names and addresses of the parties. Schedules were sent these persons, and in each one of these counties an exact statement of existing debt has been compiled. The enormous cost would preclude this method for the whole country, but work in what is termed "inquiry" counties has been of great service in correcting the work elsewhere. The "inquiry" counties also reveal the purposes for which the debt was incurred. By far the largest proportion of real estate mortgage debt has been incurred to secure the purchase of land, and the cost of improvements stands second in importance. The security of purchase money is generally 50 to 75 per

cent of the real estate mortgage debt of the people of a county, and improvements generally represent from 10 to 20 per cent. of the debt.

The following table summarizes the results of this inquiry as far as possible to date :

	Alabama.	Iowa.	Kansas.	Tennessee.	Illinois.
Number of mortgages recorded during 1880-'89.....	93,828	520,448	654,243	93,282	612,249
Amount of mortgages recorded during 1880-'89.....	\$91,099,623	\$439,936,354	\$498,653,903	\$100,212,257	\$870,699,940
Number of mortgages in force, January 1, 1890.....	35,331	252,539	298,880	39,470	297,247
Amount of mortgages in force, January 1, 1890..	\$39,027,983	\$199,774,171	\$243,146,826	\$40,421,396	\$384,299,180
Number of acres encumbered, January 1, 1890.....	6,008,636	16,312,176	26,590,795	3,035,816	10,751,244
Number of lots encumbered January 1, 1890.....	14,213	163,712	265,462	32,957	287,378
Number of acres encumbered during 1880-'89.....	16,175,153	33,864,721	58,510,089	7,269,279	21,578,919
Number of lots encumbered during 1880-'89.....	34,649	303,556	544,934	65,566	602,152
Percentages of debt recorded 1880-'89; in force January 1, 1890	42.84	45.41	48.76	40.34	44.14
Percentage of assessed acres encumbered January 1, 1890....	21.67	46.96	61.59	11.72	31.04
Equated life of mortgage (in years).....	2.73	4.92	3.38	2.81	4.02
Range of interest rates (per cent).....	1-40	1-20	1-60	1-12	1-18
Amount per capita of mortgages in force January 1, 1890....	\$26	\$104	\$170	\$23	\$100

So much for the inquiry relating to recorded real estate indebtedness. The result of the direct inquiry as to the debt on farms and homes is not yet complete. The average farm and home debt, shown by tabulation of partial returns from counties distributed throughout the Union, is \$1,288 for farms and \$924 for homes. If these averages hold good for the United States, there is an existing debt in force of \$2,500,000,000 on the farms and homes of the United States occupied by owners and incumbered. Only some rough results of this inquiry are now known. It is probable that the number of families occupying and owning mortgaged farms and homes does not exceed 2,250,000, leaving perhaps 10,250,000 families that hire their farms and homes or occupy and own them free of incumbrance. The total number of families occupying farms is supposed to be about 4,750,000, so that about 7,750,000 families occupy homes.

The exhaustive investigation made in connection with the Tenth Census as to the production of meat, cotton, tobacco, and the cereals, and likewise into forestry, renders it unnecessary that the present inquiry should be extended beyond the developments and other changes of the past ten years, and the principal features of the forthcoming agricultural report will accordingly consist of subjects that have never before had any prominent place in census investigation. Among these are horticulture, viticulture, irrigation, the production of sugar, and the peculiar conditions of farm occupancy which prevail in the southern states, all of which carry with them their own justification, horticulture being a subject of more or less importance in almost every state in the Union; viticulture, an interest that is rapidly coming into the front rank, especially in California and New York; the production of sugar, an industry that is now attracting a more than ordinary amount of attention; the cultivation of the soil by the freedmen of the South, a matter involving social and economic questions of far-reaching importance, and irrigation, the agency to which some of the most prosperous agricultural regions of the United States owe their

present productiveness, and the only method as yet by which a large portion of the arid belt can ever be successfully brought under cultivation. Probably the most important investigation that is entirely new is that of irrigation in the arid states and territories, the results of which are being presented in a series of bulletins that will aggregate not less than 300 pages, and be combined in a special report, with suitable maps and illustrations. The intricate question of farm occupancy in the South, the outcome of the former condition of slavery, is being carefully investigated, and an endeavor is being made to trace the almost invisible line which divides the farm laborer from the tenant farmer. While various minor products of the soil have been taken account of for the first time in each of the great divisions into which agriculture naturally falls, it is in horticulture that the work of the division is mainly broadened.

On the farm schedule of the Census of 1880 there were but twelve inquiries in the line of pomology. In preparing the agriculture schedule for the Eleventh Census, the questions relating to pomology were increased to fifty. The vineyard questions were increased to seven, but in view of a special investigation, nurseries remained at two. The success of this work may best be judged by the several interesting bulletins on viticulture, floriculture, nurseries, and seed and truck farms, already published. These inquiries have certainly cleared the way for similar work, and our horticulturists are not likely to accept in the future anything less than has been accomplished by the Eleventh Census. Without undertaking such an elaborate report on meat production as ten years ago, we have secured a correct enumeration of the range cattle and the usual returns of live stock on farms. In accordance with the Act of 1889 an attempt was made to secure statistics of live stock other than those on farms, that is, in cities, etc., but has not been very successful, though a report is in course of preparation on that subject.

In no branch of the Census work was the plan laid with greater care than in the division relating to manufactures. More than a

year before the enumeration, Mr. Frank R. Williams, who compiled the statistics of manufactures for the Tenth Census and who has charge of this work for the Eleventh Census, visited all the principal centers of industrial energy of the country, conferred with manufacturers, with the officers of trade associations, with economists, statisticians, and men of affairs. The schedules for every industry were prepared with the utmost caution, and new questions added only after mature consideration. The items of credit capital and borrowed capital, heretofore omitted, were asked for, and the returns are entirely satisfactory in nearly all lines of industry. We have been able to make separations between the so-called "productive" and "non-productive" forces, respectively, in order to ascertain the true proportion of labor and wages employed in actual production; and a classified wage table has been added, to show the number of persons employed at the various rates of wages paid. Additional inquiries have been incorporated to show, as nearly as possible, the actual cost of production. Success has attended all these improvements. The large increase in number employed, value of product, and capital invested, in the rough additions thus far made, leave little doubt of the thoroughness of the work. I regard the withdrawal of the schedules relating to manufactures from the regular enumerator as the emancipation of American industrial statistics. I am sure General Walker will be glad to learn that I took three times as many cities and towns out of the hands of the enumerators as he did in 1880, and the result has been most satisfactory. It might be well to state in this connection that by the provisions of the Census law the Superintendent of Census has authority, whenever he may deem it expedient, to withdraw the manufacturing schedules from the enumerators, and charge the collection of the requisite data upon experts and special agents, to be appointed without regard to locality. Under the authority thus conferred the collection of the statistics of manufactures in 1,040 cities and towns, without regard to population, was withdrawn from the

general enumeration, and the duty assigned to special agents appointed immediately after the completion of the count of the people. In all localities where the statistics were not withdrawn, as above noted, the returns have been collected by enumerators.

In the case of the following industries, special reports will be made by expert special agents charged with this duty, as noted in each case: chemical industry; clay and pottery products; coke and glass; cotton goods; distilled spirits used in the arts, manufactures, and medicine; electrical apparatus and appliances; their manufactures and uses; manufactured gas; iron and steel; mixed textiles; printing, publishing, and the periodical press; salt; shipbuilding; silk and silk goods; wool and worsted.

Special schedules have been prepared for each of the following industries, covering the general and technical details relating to each, which manufacturers engaged therein regarded as best adapted to elicit accurate information as to the existing conditions:

- No. 1. Agricultural implements.
- “ 2. Paper mills.
- “ 3. Boots and shoes.
- “ 4. Leather, tanned and curried, including morocco leather.
- “ 5. Lumber mills and saw mills.
- “ 6. Brick yards.
- “ 7. Flour and grist mills.
- “ 8. Cheese, butter, and condensed milk factories.
- “ 9. Slaughtering and meat packing.
- “ 10. Chemical manufactures.
- “ 11. Clay and pottery products.
- “ 12. Coke.
- “ 13. Cotton manufactures.
- “ 14. Dyeing and finishing of textiles.
- “ 15. Electrical industry.
- “ 16. Glass.
- “ 17. Manufactured gas.

- No. 18. Iron and steel.
“ 19. Printing, publishing, and the periodical press.
“ 20. Ship-building.
“ 21. Silk and silk goods.
“ 22. Wool manufactures.
“ 23. Hosiery and knit goods.
“ 24. Carriages and wagons.
“ 25. Salt works.
“ 26. Leather, patent and enameled.

Supplemental—distilled spirits used in the arts, manufactures and medicine.

In the case of all industries for which special schedules have not been provided, as above set forth, a general schedule of questions has been prepared, with a view to collecting data which will clearly show the general characteristics of each branch of manufactures to be reported on the general schedule.

A number of bulletins have been issued from this division, and I especially call attention to the one relating to the lumber interests of the three northwestern lumber states as a sample of excellent statistical work. [Extra Bulletin No. 5.]

Before the year closes a quarto volume of about twelve hundred pages, with illustrations and maps, will be issued from the Government Printing Office, and it will speak more eloquently than I can for the branch of the work relating to the mineral resources of the United States. This report has been prepared under the direction of Dr. David T. Day, and consists of papers from the following well-known experts:

Subject.	Author.	Number of Pages.
Manganese, Petroleum and Natural Gas...	Joseph D. Weeks.	164
Gold and Silver	Richard P. Rothwell.....	124
Coal.....	John H. Jones.....	80
Stone.....	William C. Day.....	68
Quicksilver.....	James B. Randol.....	66
Antimony, Asphaltum, Ozocerite, Gyp- sum, Infusorial Earth, Corundum, Millstones, Whetstones, Asbestos, Graphite, Soapstone, Barytes, Ocher, Fluorspar, Lithographic Stone, Sul- phur, and Pyrites.	E. W. Parker.....	60
Iron Ores....	John Birkinbine... ..	28
Copper, and Lead and Zinc... ..	Charles Kirchhoff.....	20
Precious Stones	George F. Kunz	10
Phosphate Rock... ..	Edward Willis.....	10
Aluminium.....	R. L. Packard.....	8
Mineral Waters... ..	Albert C. Peale.....	8
Mica.	L. J. Childs.....	4
Marl.....	Jefferson Middleton	2
Tin, Nickel and Cobalt, Chromic Iron } Ore, Platinum, and Iridium, }	18

From a statistical point of view we have undoubtedly made a decided step in advance in this branch of Census work. The increase during the decennium of the number of persons employed, quantity of product, and value of product, indicate that the work has been thoroughly done. The favorable reception of the bulletins by the scientific journals of this country and Europe has been alike gratifying to the experts in direct charge of the work and to the Census Office.

In the inquiry relating to fish and fisheries, we started with what is known as "a comprehensive plan," and came near going to pieces on that rock. It was intended that the inquiries should be more numerous and far-reaching than had been used in any previous Census. After a while, however, some changes were made

and the division put on a more practical basis. The present plan, and the one that will be carried out, in fact is being carried out, is the preparation and publication of fifteen reports, as follows :

1. Marine mammalia.
2. Fisheries of the Pacific coast.
3. Fisheries of the Great Lakes.
4. The Gulf fisheries.
5. The New England fisheries.
6. The South Atlantic fisheries.
7. The fisheries of the Middle states.
8. Carp culture in the North Atlantic states.
9. Carp culture in the South Atlantic states.
10. Carp culture in the South Central states.
11. Vessels engaged in the fisheries.
12. Carp culture in the Western states.
13. Carp culture in the North Central states.
14. Bulletin relating to the edible qualities of carp.
15. The inland fisheries of the United States.

Some of these reports are published, and others are now in type. The Fish Commission is giving the Census Office its hearty co-operation, and while the inquiry may have lost some of its original comprehensiveness and scope, it will have gained in statistical completeness and economic value.

Railroads, lake, ocean, river and canal transportation, express business, and street railroads comprised one division of the work of the Census Office, and under the direction of Prof. Henry C Adams, of Ann Arbor, we may expect most valuable results. Part of this work is now ready for the final volume, and all of it will be ready for the printer this year. We shall have complete railroad statistics for the ten years ended 1889, termed the decennial work, and we shall have likewise the complete work for the year ended June 30, 1890. For the first time we have gone into the question of street railways, with some marvelously interesting and valuable results. The same is true of the express business.

The attempt to secure statistics of transportation by water has been made for the first time by the Eleventh Census, so that the work must be largely considered experimental. That there existed an exceedingly large amount of information relative to transportation by water I am well aware, but when it came to securing and formulating that information we are met with those difficulties which always attach themselves to experimental work. What was sought for was the necessary figures and facts of equipment, tonnage, value, and ownership; the returns of trips made during the census year; the freight carried both in bulk and in detail of commodity; where that freight was carried to and the number of miles covered in such transportation; the expenses and profits of the work of transportation, and a particular account of the officers and crew employed, with the wages paid and length of employment. In fact, everything was sought for that would enable the Census Office to furnish a complete presentation of all that was worth knowing concerning the industry of transportation by water as conducted by American craft. These statistics, it should be understood, do not only refer to the vessels engaged in the freight and passenger traffic, but they cover every class of floating construction, from the push boat on the Little Kanawha to an Atlantic liner, and from a barge on the Dismal Swamp canal to a steamer trading with the Orient.

In order to secure this information, complete lists were made of every class of vessels; over 40,000 schedules of inquiry were sent out by an organized force of clerks to the various vessel owners; incorrect or insufficient returns were remedied wherever possible by correspondence; and wherever these means were found insufficient special agents were dispatched to work in the field.

The work of gathering the information was closed in July last, and since that time experts have been employed in segregating and compiling the vast amount of unclassified information. Some idea of the progress of the work may be gathered from the bulletins already published on the subject.

As in the transportation statistics we have given the statistics of the fire, marine, and inland insurance companies for ten years. The work is all completed. Of the old line life insurance companies, the statistics have been gathered and the data prepared for the census year, and the results are in process of tabulation. The statistics of the assessment and co-operative insurance companies (fire and life), the fraternal and independent beneficiary organizations, miscellaneous insurance companies, and the fire department and water supply of the United States have also been gathered. This work has been in charge of the expert who prepared the data ten years ago, and will be completed during the coming year.

The work of taking the census of Alaska and of the Indians has been prosecuted successfully. The final report on the Indians is now ready for the printer, and the report on Alaska will be finished in December, all the material having been collected.

The census of the Indians embraced two propositions, as called for in the act authorizing the present census the first was their enumeration; the second, a report on their condition. A bulletin, No. 25, was issued as early as January 29, 1891, giving the approximate census. For the enumeration of fifty-three reservations, the United States Indian agents were appointed enumerators. A corps of special agents was also appointed, who visited each reservation, and saw that the census was properly taken or had been, and made a report on the condition of the Indians of each reservation.

The five civilized tribes were enumerated by Indian and white enumerators under the charge of a special agent for each of the tribes, who also reported on their condition. A very large white and colored population was found in the five tribes, equal to that of several of the smaller states of the Union. The Six Nations of New York were enumerated and reported by a special agent. This work required almost eleven months. The Cherokees of North Carolina were also enumerated by a special agent. The Moqui Pueblos and Pueblos were also

specially reported on. A series of illustrations were made with brush and pencil, and also by the aid of the camera, which will give an exhaustive idea of the actual condition of the Indians in 1890. Seven artists of standing were appointed special agents, who contributed much toward making this Census a success. The Indians taxed, or those living off a reservation, or out of tribal relations, were also enumerated by the regular enumerators. The enumeration of the Indians included some 30 states and territories, and beside employing some hundreds of the regular enumerators, there were 94 Indian agent enumerators and special agents in the service. The work was a serious problem, but under the able direction of Thomas Donaldson, Esq. has been satisfactorily completed to the point of publication. Four extra bulletins are now under way.

The list of names of all tribal Indians (excepting those of two tribes) is for the first time in any census in the Census Office, and in many cases both the Indian and the white names are given. The scope of the work was large, but practical, and the result has been satisfactory thus far. It embraces age, wealth, resources, and all items of an economical nature. The schedules for Indian enumeration were quite different from those used in other census work, being more simple.

Besides a complete enumeration of the Alaskan population, Mr. Petroff, who again undertook the Alaskan work, will give an exhaustive review of Alaskan commerce, and I have obtained a number of excellent monographs, written by intelligent residents of Alaska, descriptive of their sections of the territory. The statistics of fisheries and of mining have also been collected. The entire report will be both reliable and interesting.

Having rapidly passed over the main features of the administration and organization of the Census Office, and having pointed out wherein the Eleventh differs from previous censuses, I will close with a brief summary of these differences, and a plea for a permanent Census Bureau. The Eleventh Census will be more

statistical and deal less with our latent resources and the technology of our industries than the Tenth did. It includes in its scope several new features, such as the investigation into private and corporate indebtedness, the special inquiry relating to the soldiers of the late war and the widows of veterans. Several new questions were added to the population schedule, which, as I have shown, will throw light upon important questions. A report has been made upon the condition of the Indians, and valuable reports on the statistics of education, churches, and the fisheries are nearly completed. To this extent we have undoubtedly taken a decided step ahead of other censuses. The population work has been strengthened. I have no reason to doubt that the enumeration of the people was fully equal to the enumeration of the Tenth Census, and that enumeration could not be excelled under the present system. The tabulation, as I have shown at length, has been improved, and the classification greatly extended. Facts were collected in 1870 and 1880, but never tabulated; but their counterpart to date will find their way into the current volumes. As five-sixths of all my experts and chiefs had experience in the Tenth Census, the office has benefited by their experience. In the special work, healthy statistical advancement has been made all along the line. We did not attempt the impossible. We reduced the number of questions whenever practicable. We confined ourselves strictly to the salient points. We did not try to be too original. We were not too proud to take up the plans where our brethren of the Tenth Census laid them down. We did not enlarge the scope, but often condensed it. In this way we strengthened our vital statistics by the five-year registration work; we made it possible to secure correct schedules of the special classes by institution enumerators; we brought the electrical tabulation, as Mr. Wines has shown us, to bear on the statistics of crime, pauperism, and benevolence; we discarded all but the essential questions in the educational schedules; we reduced the work relating to religious bodies to a point where the preachers and ecclesiastical

officers would answer the questions ; we strengthened the wealth, debt, and taxation work at every point ; we added several new and important inquiries to the agricultural and horticultural statistics, and included subjects omitted by all previous censuses ; we trebled the number of places in which the manufacturing statistics were withdrawn from the enumerators and placed the collection in the hands of competent special agents, paid by the day, and brought every expert under the control of a central head at Washington, so there could be no over-lapping ; we applied the same method to the statistics of the mineral resources ; we made the inquiry relating to fish and fisheries more statistical ; we added several new and important features to the statistics of transportation ; we included the ten years' work and the fraternal and independent beneficiary assemblies in the insurance branch ; we made a complete report of the condition of all the Indians, and we have kept up the reputation of the Tenth Census on the report on the population and wealth of Alaska. And with all these inquiries the word failure cannot be applied to one investigation.

Having done all this, and feeling, as we do, proud of some of our achievements, I give you the honest judgment of my co-laborers when I say that much more remains to be done—that many imperfections exist. These imperfections are not the result of dishonest work, of incompetent work, of slovenly work ; they are the result of the system under which the census is taken. Time enough is not allowed to start the machinery of this tremendous inquiry, embracing, as I have shown you, so many subjects and such infinite detail. We have work here, which, if properly done, would be sufficient to make a life study for thirty or fifty of our brightest specialists, literally dumped upon the shoulders of a man drawn from other occupations of life, and instructed by act of Congress to raise an army of sixty thousand raw recruits and complete the task. If he takes time to do it, the public becomes impatient and declares it drags everlastingly. If he puts it through rapidly, croakers rise up all over the land and declare the work

cannot be correct. The remedy for all this is a permanent Census Bureau, and already the intelligent public sentiment of all political parties is crystallizing in this direction. People are beginning to realize that the faults and errors of this Census are not the shortcomings of any one man, but of a system.

In accordance with a resolution of the Senate I am preparing a report and bill for a permanent Census Bureau, which, if enacted, will remedy much of the decennial census trouble, and put a great public work on a business basis. Such a Bureau would not only be an immense saving to the government, especially since the introduction of mechanical tabulation, but it would keep active and competent minds continually working out improvements in census methods; it would keep together a nucleus of trained census clerks and capable mathematicians; it would admit of certain branches of work being done annually at a cost of a few million circulars and a small amount expended for tabulation; it would give sufficient time to perfect the work of enumeration, and it would give general satisfaction to all who are earnestly in search of correct statistics of our nation's population and wealth. As statisticians, I hope you will help this idea along. It is growing with our statesmen. It is not a party question, and its success will be beneficial to all people.

APPENDIX.

BULLETINS THAT HAVE BEEN PUBLISHED OR WILL BE PUBLISHED BY THE CONVENING OF CONGRESS IN DECEMBER.

SUBJECTS.	Number.
AGRICULTURE :	
Viticulture.....	38
Truck Farming.....	41
Commercial Floriculture.....	59
Nurseries..	109
Seed Farms.....	111
Production of Hops	(a)
Horses, Mules, and Asses on Farms....	103
Live Stock on Ranges.....	117
Irrigation in Arizona.....	35
Irrigation in New Mexico.....	60
Irrigation in Utah	85
Irrigation in Wyoming.....	107
Tobacco.....	Extra No. 13
ALASKA :	
Letter of Ivan Petroff on Census of.....	15
Population of Alaska....	30
Wealth and Resources of.....	39
CHURCHES :	
United Presbyterian of North America, Church of the New Jerusalem (Swedenborgian), Catholic Apostolic, Salva- tion Army, Advent Christian, Evangelical Adventist, Life and Advent Union (Adventists), Seventh-day Baptists, Seventh-day Baptists, (German), General Six	18

(a) Number not yet determined.

SUBJECTS.

Number.

CHURCHES—Continued :

Principle Baptists, Christian Church South, Schwenkfeldians, Theosophical Society, and Brethren in Christ (River Brethren).

Cumberland Presbyterian, Church of Jesus Christ of Latter-day Saints (Mormons), Reformed Episcopal, Unitas Fratrum or Moravian, German Evangelical Synod of North America, German Evangelical Protestant of North America, and Plymouth Brethren. 70

Roman Catholic, Greek Catholic (Uniates), Russian Orthodox, Greek Orthodox, Armenian, Old Catholic, and Reformed Catholic. 101

Mennonite, Bruederhoef Mennonite, Amish Mennonite, 131
 Old Amish Mennonite, Apostolic Mennonites, Reformed Mennonite, General Conference Mennonite, Church of God in Christ, Old (Wisler) Mennonites, Bundes Conference der Mennoniten Brueder-Gemeinde, Defenceless Mennonites, Mennonite Brethren in Christ, Brethren or Dunkards (Conservative), Brethren or Dunkards (Progressive), African Methodist Episcopal, Wesleyan Methodist Connection, African Union Methodist Protestant, Independent Churches of Christ in Christian Union, Temple Society, Church of God, Reorganized Church of Jesus Christ of Latter-day Saints, Society of Shakers, Amana Society, Bruederhoef Mennonite Society, Harmony Society, Society of Separatists, New Icaria Society, and Society of Altruists.

EDUCATION :

Preliminary Statistics for Louisiana, New Hampshire, Wisconsin, and cities of 10,000 inhabitants and over ; also, Mormon schools in Arizona, Idaho, and Utah. 17

SUBJECTS.

Number.

EDUCATION—Continued.:

Statistics for Arizona, California, Connecticut, District of Columbia, Maine, Maryland, Massachusetts, Montana, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Vermont, Virginia, Wyoming, and eighty-three cities.....	36
Statistics for Alaska, Arkansas, Delaware, Illinois, Iowa, Michigan, Minnesota, Mississippi, New Mexico, New York, North Dakota, Oregon, Texas, Utah, Washington, West Virginia, and forty-two cities.....	53
Statistics for Alabama, Colorado, Florida, Georgia, Idaho, Indiana, Kansas, Kentucky, Missouri, Nebraska, Nevada, New Jersey, Tennessee, and one hundred and five cities..	84
School Enrollment	Extra No. 11

FARMS, HOMES, AND MORTGAGES :

Letter to Secretary of the Interior on.....	5
Alabama and Iowa.....	Extra No. 3
Kansas.....	Extra No. 14
Tennessee.....	Extra No. (a)

FISHERIES :

List of Products of.....	2
Marine Mammalia.....	123

GEOGRAPHICAL :

Supervisors' Districts.....	1
Names and Addresses of Supervisors'.....	4
Areas of States and Counties.....	23
Center of Population.....	34
Population by Drainage Basins.....	47
Population with Reference to Mean Annual Temperature..	33
Population in Accordance with Mean Annual Rainfall ...	32
Population in Accordance with Mean Relative Humidity..	44

(a) Number not yet determined.

SUBJECTS.

Number.

GEOGRAPHICAL—Continued :

Population in Accordance with Latitude and Longitude..	63
Population in Accordance with Topographical Features..	65
Population in Accordance with Altitude.....	89
Increase and Decrease of Population.. .. .	Extra No. 1
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INDIANS :

In the United States (except Alaska) Taxed or Taxable and Untaxed.....	25
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INSURANCE :

Alabama to Florida.....	Extra No. 6
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Maryland to New Hampshire	Extra No. 8
New Jersey to Tennessec.....	Extra No. 9

MANUFACTURES :

Cities and Towns in which Statistics will be collected by Special Agents.....	3
Production of Pig Iron.....	9
Production of Steel.....	13
Distilled Spirits used in the Arts, Manufactures, and Medicine.....	22
Statistics of District of Columbia.....	(a)
Lumber and Saw Mills.....	Extra No. 5

MINES AND MINING :

Quicksilver Mines and Reduction Works	10
Precious Stones and Diamond Cutting.....	49
Production of Slate.....	8
Production of Granite in the United States.....	45
Production of Mica.....	61
Production of Manganese Ores.....	68

(a) Number not yet determined.

SUBJECTS.	Number.
MINES AND MINING—Continued :	
Production of Bluestone	71
Production of Sandstone.....	73
Production of Petroleum.....	76
Production of Limestone	78
Production of Aluminium.....	79
Production of Lead and Zinc.....	80
Production of Copper.....	96
Production of Iron Ore.....	113
Minor Mineral Industries.....	75
Anthracite Coal Fields of Pennsylvania ...	20
Production of Coal in Maryland	26
Production of Coal in Alabama.....	27
Production of Coal west of the Mississippi.....	43
Production of Bituminous Coal in Pennsylvania	67
Production of Coal in Illinois, Ohio, Indiana, and Michigan	74
Coal product of West Virginia, Kentucky, Tennessee, Virginia, Georgia, and North Carolina.....	94
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Marble Quarrying Industry—Monograph.....	
PAUPERISM AND CRIME :	
Convicts in Penitentiaries.....	31
Sentences of Convicts in Penitentiaries.....	106
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(a) Number not yet determined.

